



WHAT'S ALL THE  
NOISE ABOUT NOISE?



# NOISE FACTS

- Noise is both PHYSICAL and PSYCHOLOGICAL.
- PHYSICAL - Noise energy is a spherical pressure wave.
- PSYCHOLOGICAL - hearing is one of the five senses, but everyone has a slightly different tolerance.



Sound Pressure and  
Human Sensory Response

combine to produce

SOUND PRESSURE LEVEL



# NOISE LEVELS

- 140 dBA Threshold of Pain
- 70 dBA Noisy
- 50 dBA Quiet
- 0 dBA Threshold of Hearing



# NOISE ENERGY

- A 3 dBA change is the THRESHOLD OF PERCEPTION.
- A 10 dBA reduction requires a 90% energy reduction.
- DOUBLE the source energy - increase sound level by 3 dBA.
- HALVE the source energy - decrease sound level by 3 dBA.



# NOISE IMPACT ANALYSIS

- Evaluate project location.
- Identify sensitive noise receptors.
- Obtain site-specific data (traffic volumes, geometrics, receptors, etc.)
- Utilize FHWA-approved models.
- Compare predicted noise levels to Criteria Levels.
- If necessary, propose mitigation.



# NOISE POLICIES

- FHWA Noise Policy
- ADOT Noise Policy



# NOISE ABATEMENT CRITERIA

- 67 dBA for residences, motels, schools, churches, libraries, and hospitals.  
(FHWA)
- 64 dBA (ADOT).





# MITIGATION

- Break the Line of Sight with Barriers
  - Walls
  - Berms



# NOISE BARRIERS

- Breaking the Line of Sight gives 5 dBA reduction (barrier about 6 feet tall)
- Each additional 2 feet of height provides about 1 dBA reduction.
- A 16 foot tall barrier may provide about 10 dBA reduction.